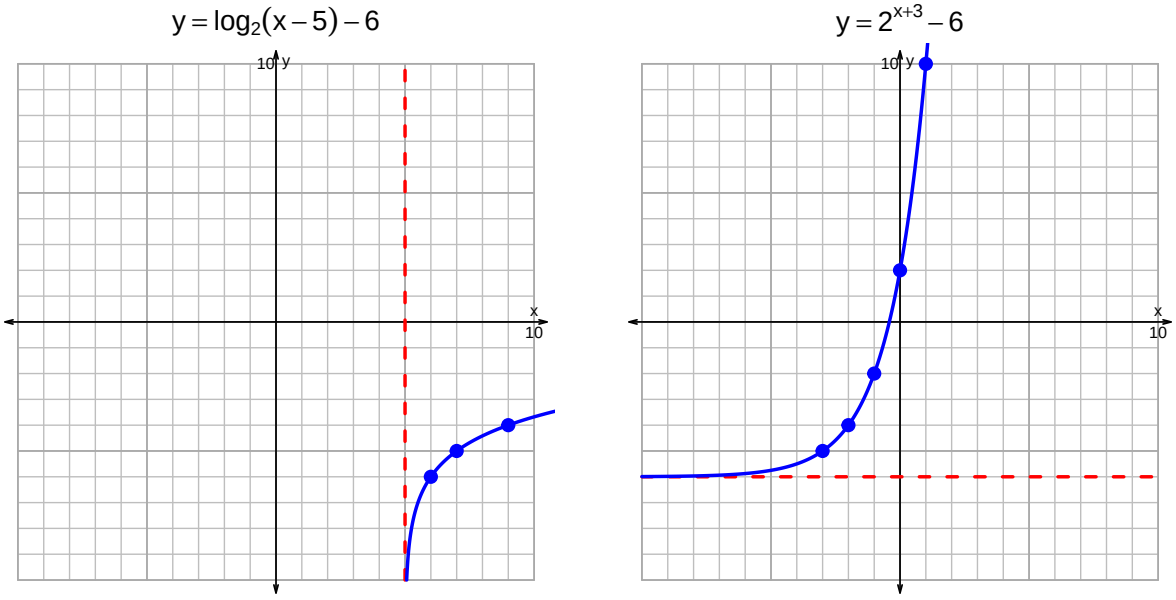
Name: Date:

S18QUIZ: EXP LOG (SLTN v298)

1. Graph $y = \log_2(x-5) - 6$ and $y = 2^{x+3} - 6$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-23 = \left(\frac{-5}{4}\right) \cdot 10^{-3t/7}$$

Divide both sides by $\frac{-5}{4}$.

$$\frac{23 \cdot 4}{5} = 10^{-3t/7}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{23 \cdot 4}{5}\right) = \frac{-3t}{7}$$

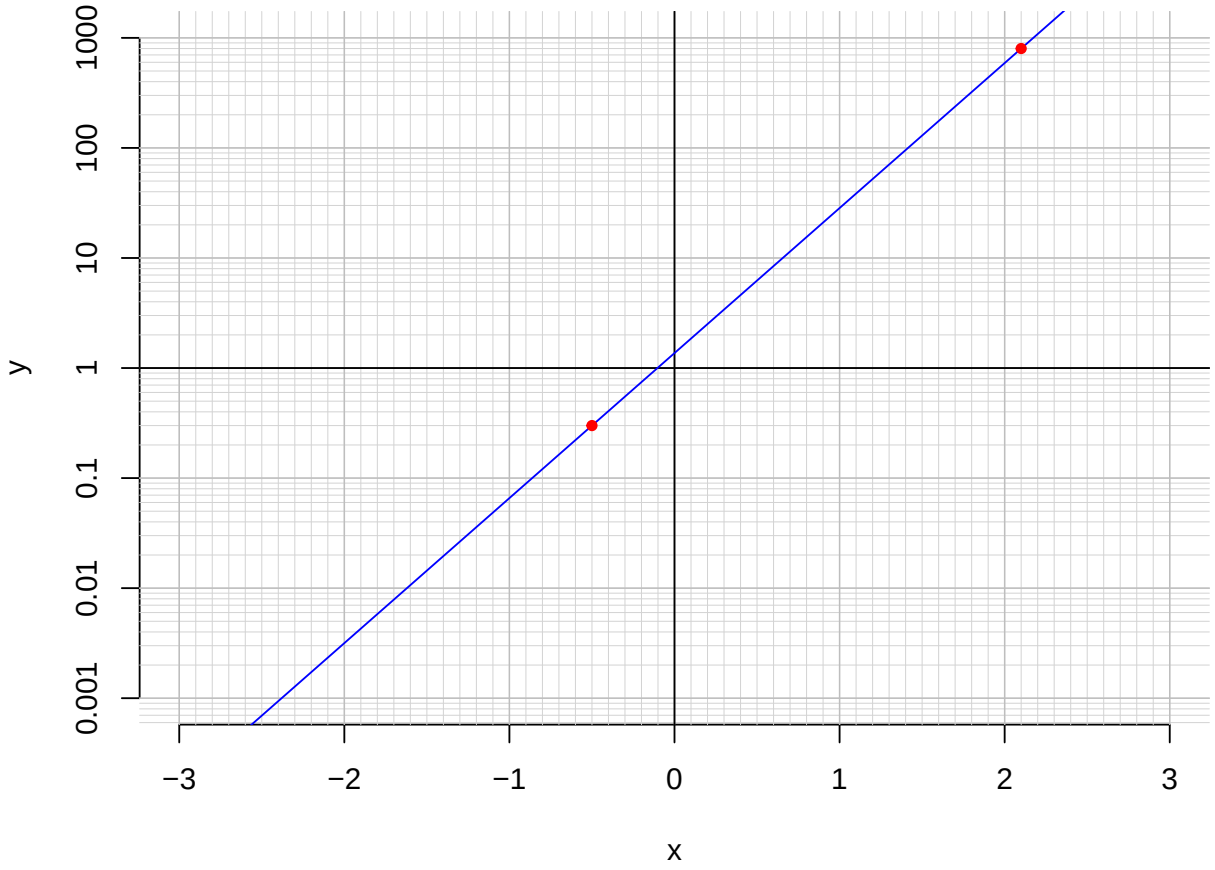
Divide both sides by $\frac{-3}{7}$.

$$\frac{-7}{3} \cdot \log_{10}\left(\frac{23 \cdot 4}{5}\right) = t$$

Switch sides.

$$t = \frac{-7}{3} \cdot \log_{10}\left(\frac{23 \cdot 4}{5}\right)$$

3. An exponential function $f(x) = 1.37 \cdot e^{3.03x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-0.5)$.

$$f(-0.5) = 0.3$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{3.03} \cdot \ln\left(\frac{x}{1.37}\right)$$

c. Using the plot above, evaluate $f^{-1}(800)$.

$$f^{-1}(800) = 2.1$$